

### **REMARKS**

This responds to the Office Action mailed on June 7, 2004.

Claims 18-22, 28, 31-37, 43, and 47 are amended. Claims 25, 27, 30, and 46 have been canceled by way of this amendment, and claims 1-17, 26, 29, and 44 were previously canceled. No claims are added. As a result, claims 18-24, 28, 31-43, 45, and 47 are now pending in this application.

#### **Amendments to Claims 18-22, 28, 31-37, 43, and 47**

As mentioned above, claims 18-22, 28, 31-37, 43, and 47 been amended. No new matter has been introduced.

Independent claim 18 has been amended by reciting *inter alia* that the geometric centers of vias of adjacent lands are offset in substantially a same direction with respect to the geometric centers of the corresponding lands. Support may be found, for example, in claim 20 prior to its current amendment.

Claim 19 has been amended by deleting the previous recitations and by reciting that each via is circular. Support may be found, for example, in claims 42 and 45.

Claim 20 has been amended by reciting that each via is to inhibit a thermally expansive substance residing in the vias from causing adjacent contacts of the integrated circuit package to be bridged when the lands and contacts are subjected to heat. Support may be found, for example, in claim 22.

Independent claim 21 has been amended by reciting that the lands comprise a first group having vias whose geometric centers are offset in a first direction with respect to the geometric centers of the lands in the first group, and a second group having vias whose geometric centers are offset in a second direction with respect to the geometric centers of the lands in the second group. Support may be found, for example, in FIG. 9 and in claim 25.

Claim 22 has been amended by substituting "is to inhibit" for "inhibits".

Independent claim 28 has been amended by reciting that the geometric centers of vias of adjacent lands are offset in substantially a same direction with respect to the geometric centers of the corresponding lands. Support may be found, for example, in claim 30.

Claims 31 and 32 have been amended by inserting the phrase “the edge of” and by substituting “defines” for “has an edge defining”.

Claim 33 has been amended by deleting “an edge and”, because independent claim 28 already recites “an edge”.

Independent claim 34 has been amended by inserting the phrase “having a geometric center” and by reciting that the geometric centers of vias of adjacent lands are offset in substantially a same direction with respect to the geometric centers of the corresponding lands. Support may be found, for example, in claim 36 prior to its current amendment.

Claim 35 has been amended by deleting “wherein each via has a geometric center”.

Claim 36 has been amended by deleting the previous recitation and reciting that each via is circular. Support may be found, for example, in claims 42 and 45.

Independent claim 37 has been amended by reciting that the lands comprise a first group having vias whose geometric centers are offset in a first direction with respect to the geometric centers of the corresponding lands of the first group, that the lands comprise a second group having vias whose geometric centers are offset in a second direction with respect to the geometric centers of the corresponding lands of the second group, and that the first direction is opposite to the second direction. Support may be found, for example, in FIG. 9, claim 47, and on page 14, line 16 of the original disclosure.

Independent claim 43 has been amended by reciting that the lands comprise a first group having vias whose geometric centers are offset in a first direction with respect to the geometric centers of the corresponding lands of the first group, and that the lands comprise a second group having vias whose geometric centers are offset in a second direction with respect to the geometric centers of the corresponding lands of the second group. Support may be found, for example, in FIG. 9 and claim 47.

Claim 47 has been amended by reciting that the first direction is opposite to the second direction. Support may be found, for example, on page 14, line 16 of the original disclosure.

**Rejection of Claims 18-21, 25, 27,**  
**28, 30-37, 42, 43, and 45-47**  
**under 35 U.S.C. §102(b)**  
**as Anticipated by Barrow**

Claims 18-21, 25, 27, 28, 30-37, 42, 43, and 45-47 were rejected under 35 U.S.C. §102(b) as being anticipated by Barrow (U.S. 5,706,178).

Barrow discloses a ball grid array integrated circuit package having elliptically-shaped solder pads (see Abstract) containing vias that may be off-center (see col. 3, line 13).

The rule under 35 U.S.C. §102 is well settled that “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2D 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). MPEP §2131.

With respect to independent claim 18, as amended, Barrow does not disclose all of the structural elements recited in this claim. For example, Barrow does not disclose that the geometric centers of vias of adjacent lands are offset in substantially a same direction with respect to the geometric centers of the corresponding lands. In the most recent Office Action, the Examiner asserted otherwise, referring to FIGS. 6 and 7. However, Applicants point out that these figures represent separate embodiments, so they cannot be fairly viewed in the manner suggested by the Examiner.

For the above reasons, claim 18 should be found to be allowable over Barrow, and Applicants respectfully request that the rejection of claim 18 under 35 U.S.C. §102(b) as anticipated by Barrow be withdrawn.

Claims 19-20, which depend from claim 18 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

With respect to independent claim 21, as amended, Barrow does not disclose all of the structural elements recited in this claim. For example, Barrow does not disclose that the lands comprise a first group having vias whose geometric centers are offset in a first direction with respect to the geometric centers of the lands in the first group, and a second group having vias whose geometric centers are offset in a second direction with respect to the geometric centers of the lands in the second group.

For the above reasons, claim 21 should be found to be allowable over Barrow, and Applicants respectfully request that the rejection of claim 21 under 35 U.S.C. §102(b) as anticipated by Barrow be withdrawn.

Claims 22-24, which depend from claim 21 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

With respect to independent claims 28 and 34, as amended, Barrow does not disclose all of the structural elements recited in these claims. For example, Barrow does not disclose that the geometric centers of vias of adjacent lands are offset in substantially a same direction with respect to the geometric centers of the corresponding lands.

For the above reasons, independent claims 28 and 34 should be found to be allowable over Barrow, and Applicants respectfully request that the rejection of claims 28 and 34 under 35 U.S.C. §102(b) as anticipated by Barrow be withdrawn.

Claims 31-33, which depend from claim 28 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above. Likewise, claims 35-36, which depend from claim 34 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

With respect to independent claim 37, as amended, Barrow does not disclose all of the structural elements recited in this claim. For example, Barrow does not disclose that the lands comprise a first group having vias whose geometric centers are offset in a first direction with respect to the geometric centers of the corresponding lands of the first group, that the lands comprise a second group having vias whose geometric centers are offset in a second direction with respect to the geometric centers of the corresponding lands of the second group, and that the first direction is opposite to the second direction.

For the above reasons, claim 37 should be found to be allowable over Barrow, and Applicants respectfully request that the rejection of claim 37 under 35 U.S.C. §102(b) as anticipated by Barrow be withdrawn.

Claims 38-42, which depend from claim 37 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

With respect to independent claim 43, as amended, Barrow does not disclose all of the structural elements recited in this claim. For example, Barrow does not disclose that the lands

comprise a first group having vias whose geometric centers are offset in a first direction with respect to the geometric centers of the corresponding lands of the first group, and that the lands comprise a second group having vias whose geometric centers are offset in a second direction with respect to the geometric centers of the corresponding lands of the second group

For the above reasons, claim 43 should be found to be allowable over Barrow, and Applicants respectfully request that the rejection of claim 43 under 35 U.S.C. §102(b) as anticipated by Barrow be withdrawn.

Claims 45 and 47, which depend from claim 43 and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

**Rejection of Claims 22-24 and 38-41**  
**Under 35 U.S.C. §103(a) as Unpatentable**  
**over Barrow**

Claims 22-24, and 38-41 were rejected under 35 U.S.C. §103(a) as being unpatentable over Barrow.

Barrow was discussed/described previously.

To establish a *prima facie* case of obviousness under 35 U.S.C. §103, the prior art reference (or references when combined) must teach or suggest every limitation of the claim. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA, 1974). MPEP §2143.

As Applicants pointed out above, regarding the rejection of independent claims 21 and 37, the asserted rejection over Barrow fails to teach or suggest all of the claim limitations present in independent claims 21 and 37, as amended, so a *prima facie* case of obviousness has not been established.

For the above reasons, independent claims 21 and 37 should be found to be allowable over Barrow.

If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. MPEP §2143.03.

Claims 22-24 and 38-41, which depend from claims 21 and 37, respectively, and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above, and Applicants respectfully request that the rejection of claims 22-24 and 38-41 under 35 U.S.C. §103(a) as unpatentable over Barrow be withdrawn.

**Additional Elements and Limitations**

Applicants consider additional elements and limitations of claims 18-24, 28, 31-43, 45, and 47 to further distinguish over the cited references, and Applicants reserve the right to present arguments to this effect at a later date.

**Conclusion**

Applicants respectfully submit that claims 18-24, 28, 31-43, 45, and 47 are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicants' attorney, Walter W. Nielsen (located in Phoenix, Arizona) at (602) 298-8920, or the below-signed attorney (located in Minneapolis, Minnesota) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

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By their Representatives,

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Date Aug. 9, 2004

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**CERTIFICATE UNDER 37 CFR 1.8:** The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 9 day of August, 2004.

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